

**REMARKS:**

1. Rejections

Claims 1 and 3 stand objected to as including a typographical error. Claims 1-6 stand rejected under 35 U.S.C. § 112, ¶1, as allegedly failing to comply with the written description requirement. Claims 1-6 stand rejected under 35 U.S.C. § 102(b), as allegedly clearly anticipated by each of Japanese Patent Publication No. JP-A-7-280484 ("JP-'484) and U.S. Patent No. 2,360,123 to Gerstung *et al.* ("Gerstung"). Applicants respectfully disagree.

2. Claim Objections

Claims 1 and 3 stand objected to as including a typographical error. In accordance with the Examiner's suggestions, Applicants have amended claims 1 and 3 to insert the word "of" between the word "length (T)" and the word "an." Therefore, Applicants respectfully request that the Examiner withdraw the objections to claims 1 and 3.

3. 35 U.S.C. § 112, ¶1

Claims 1-6 stand rejected as allegedly failing to comply with the written description requirement. Specifically, the Office Action alleges that "[t]here is no support for [the limitation] a length (T) of an outer surface and an inner surface." Office Action, Page 2, Line 20. The Office Action also asserts that "[a]s disclosed with respect to Figure 5 (page 8), the connecting portion length (T) is determined by the distance between first and second critical points in the upper portion of the fin and/or the distance between third and fourth critical points in the lower fin." *Id.* at Lines 20-23. "As shown in Figure 5, the connecting portion length (T) is determined by critical points on the inner surface of the fin. *Id.* at Lines 23 and 24. "With reference to the outer surface of the fin, the critical points would provide [an outer surface] connecting portion length (T) unequal to the inner surface connection [length]." *Id.* at Page 3, Lines 1 and 2. Applicants disagree.

Referring to **Fig. 5**, the Office Action fails to appreciate that a measure of length (T) is shown for both upper and lower sides of the fin. In **Fig. 5**, the measure  $T = t$  is shown where it is because the intersection of the bent portions of a fin strip with the flat portions the adjacent fin define the length (T). Applicants' specification states that:

in [Applicants'] fin structure, the length (T) of each connecting portion is less than or equal to about the thickness (t) of a plate forming each waving strip. Due to this relationship, bending by a rolling process may be

possible at the connecting portions. Specifically, if the connection is made over a large area or a long length, as shown in JP' 484, such bending by a rolling process may be impossible. In the structure according to the present invention, however, the bending by a rolling process may be performed with no problem.

Appln, Page 5, Lines 13-18 (emphasis added.) Thus, Applicants' specification equates connection portion "length" with connection portion "area," and the connection portion area includes both the inner and outer surface of the connection portion.

Moreover, the Office Action alleges that the connection portion length at the outer surface is the same as the length of the overlapping portion between adjacent waving strips. Nevertheless, in view of the portion of the specification quoted above, Applicants have clearly distinguished their invention over a structure such as the fin described in JP-'484, and the rolling process could not be used to manufacture the fin described in JP-'484. Although the claims pending in the above-captioned patent application do not claim such a rolling process, based on the above-quoted portion of Applicants' specification, especially when considered in combination with the disclosures of **Figs. 5 and 6**, those of ordinary skill in the art would understand that the length (T) of Applicants' claimed connection portion is less than or about equal to the thickness (t) of the waving plates at both the inner surface and the outer surface of the connection portion. Therefore, Applicants respectfully request that the Examiner withdraw the written description rejections.

4. 35 U.S.C. § 102(b)

Claims 1-6 stand rejected as allegedly, clearly anticipated by each of JP-'484 and Gerstung. "A claim is anticipated if and only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," and "the identical invention must be shown in as complete detail as contained in the claim." MPEP 2131. The Office Action alleges that either JP-'484 or Gerstung describe each and every element as set forth in claims 1-6. Applicants respectfully disagree.

Applicants claims 1 and 3 describe a fin for a heat exchanger comprising a plurality of waving strips, in which "adjacent waving strips are connected at connecting portions between said first flat portions of said adjacent waving strips and between said second flat portions of said adjacent waving strips, [wherein] a length (T) of an outer surface and an inner surface each connecting portion in said longitudinal direction of each waving strip is less than or equal to about a thickness (t) of a plate forming each waving strip." (Emphasis added.) As such,

Applicants' claimed invention describes the connecting length (T) of the outer and the inner surface of the connecting portion as less than or equal to about the plate thickness (t). (Emphasis added.)

The Office Action in the above-captioned patent application includes a marked-up copy of Applicants' **Fig. 5**. This marked-up copy of Applicants' **Fig. 5** indicates that the Office Action is asserting that Applicants' claimed "*connection* portion" between adjacent waving strips is the same as the *overlapping* portion between adjacent waving strips. Nevertheless, in contrast to the related art, in Applicants invention, the "*connection* portion" and the overlapping portion are not equivalent to each other. (Emphasis added.) Specifically, Applicants' claimed "*connection* portion" is shorter than the *overlapping* portion because adjacent waving strips only are physically connected to each other at a portion of the *overlapping* portion, and such *connection* portion has a length (T) which is less than or about equal to the thickness (t) of the waving strips.

The Office Action asserts that "independent claims 1 and 3 do not recite how the [length of the] connecting portion is determined." Office Action, Page 4, Lines 5 and 6. "As such, the connecting portion may be a length (T) along an entire length or a portion [of the overlapping portion]." *Id.* at Lines 6 and 7. Nevertheless, Applicants' specification states that:

in [Applicants'] fin structure, the length (T) of each connecting portion is less than or equal to about the thickness (t) of a plate forming each waving strip. Due to this relationship, bending by a rolling process may be possible at the connecting portions. Specifically, if the connection is made over a large area or a long length, as shown in JP' 484, such bending by a rolling process may be impossible. In the structure according to the present invention, however, the bending by a rolling process may be performed with no problem.

Appln, Page 5, Lines 13-18. Moreover, claims 1 and 3 clearly state that the length (T) of the *connection* portion is less than or about equal to the thickness (t) of the waving strips. Thus, when the length of the *overlapping* portion is greater than the thickness (t) of the waving strips, e.g., as shown in Applicants' **Figs. 5 and 6**, Applicants' *connection* portion clearly cannot be along the entire length of the *overlapping* portion because then the rolling process cannot be used to make the fin. (Emphasis added). Instead, as set forth in claims 1 and 3 and as shown in Applicants' **Figs. 5 and 6**, the length (T) of the physical connection between adjacent waving strips is less than or about equal to the thickness (t) of the waving strips.

a. JP-‘484

The Office Action also includes a marked-up copy of Applicants’ Fig. 13, which corresponds to Fig. 5 of JP-‘484. The Office Action asserts that with respect to JP-‘484, “Applicants’ are determining the connection portion length (T) based on critical points inconsistent with Applicants’ claims and specification.” Office Action, Page 4, Lines 10-11. However, this is because in JP-‘484, and in contrast to Applicants’ invention, adjacent waving strips 102 and 103 are physically connected to each other over their entire overlapping length. (Emphasis added.) Consequently, the critical points used to determine the length of the connection portion in JP-‘484 are different than the critical points used to determine the length of Applicants’ connection portion. (Emphasis added.)

Moreover, as set forth in the above-quoted portion of Applicants’ specification, Applicants’ claimed invention is distinguishable from JP-‘484 because the area/length of Applicants’ connection portion is less than the area/length of the connection portion in JP-‘484. Specifically, adjacent waving strips 102 and 103 in JP-‘484 are physically connected to each other over their entire overlapping length. Because adjacent waving strips 102 and 103 are physically connected to each other over their entire overlapping length, the length of the connection portion in JP-‘484 is greater than the thickness of waving strips 102 and 103. Therefore, Applicants respectfully request that the Examiner withdraw the anticipation rejection of claims 1 and 3 in view of JP-‘484.

Claims 2 and 4-6 depend from claims 1 and 3, respectively. Therefore, Applicants respectfully request that the Examiner also withdraw the anticipation rejection of claims 2 and 4-6 in view of JP-‘484.

b. Gerstung

Gerstung depicts a fin 44 of a heat exchanger comprising a plurality of waving strips 47, and adjacent waving strips 47 are connected at connecting portions. The Office Action asserts that uncut portions of waving strips 47 define the connection portion between adjacent waving strips 47, and that “the uncut portions are intersections between the ‘flat portions’ of adjacent waving strips. Applicants are enclosing a marked-up copy of Fig. 4 of Gerstung. Applicants maintain that these uncut portions correspond to locations where adjacent waving strips 47 overlap, and as described above with respect to JP-‘484, adjacent waving strips 47 are physically connected to each other over their entire overlapping length. Moreover, as clearly

shown by the enclosed copy of **Fig. 4** of Gerstung, the overlapping length of adjacent waving strips 47 is greater than the thickness of waving strips 47. Therefore, Applicants respectfully request that the Examiner withdraw the anticipation rejections of claims 1 and 3 in view of Gerstung.

Claims 2 and 4-6 depend from amended claims 1 and 3, respectively. Therefore, Applicants respectfully request that the Examiner also withdraw the anticipation rejection of claims 2 and 4-6 in view of Gerstung.

CONCLUSION

Applicants respectfully submit that this application is in condition for allowance, and such disposition is earnestly solicited. If the Examiner believes that a further interview with Applicants' representatives, either in person or by telephone, would expedite prosecution of this application, we would welcome such an opportunity. Applicants believe that no fees are due as a result of this responsive amendment. Nevertheless, in the event of any variance between the fees determined by Applicants and those determined by the U.S. Patent and Trademark Office, please charge any such variance to the undersigned's Deposit Account No. 02-0375.

Respectfully submitted,

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Enclosure

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